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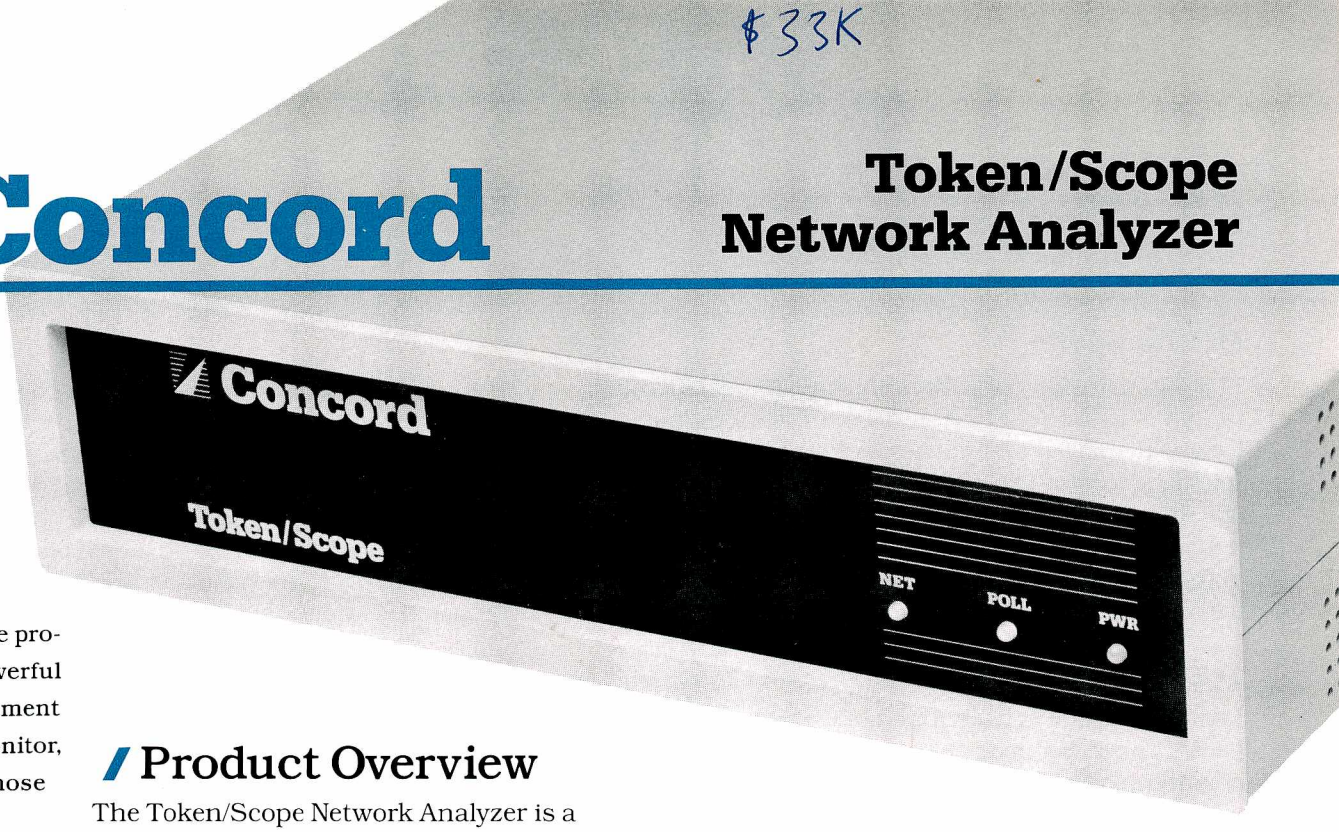
# Concord

# Token/Scope Network Analyzer




The Token/Scope provides a set of powerful network management tools used to monitor, isolate and diagnose real time events occurring on broadband or carrierband IEEE-802.4/MAP networks.

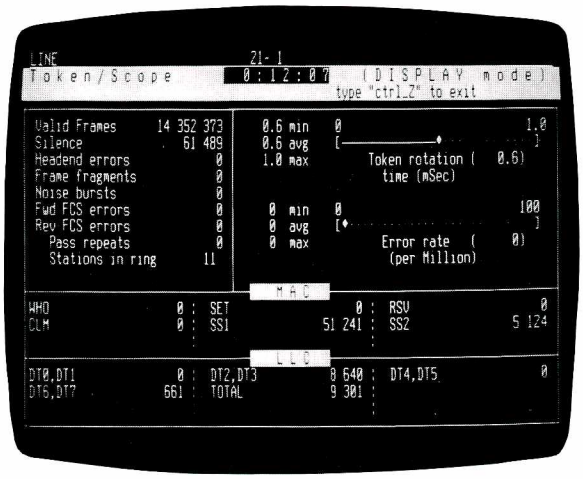
## Product Overview

The Token/Scope Network Analyzer is a sophisticated, IEEE-802.4 protocol-level network diagnostic and management tool for Concord Communications' Token/Net MAP local area network. Available for 10 Mbps broadband MAP networks and 5 Mbps carrierband MAP networks, the Token/Scope allows a network manager to monitor real-time low level protocol transactions and rapidly isolate and diagnose potential protocol problems.

The Token/Scope Network Analyzer consists of an IEEE-802.4 compliant broadband or carrierband modem, an Access unit, and a Control Unit configured with the appropriate Token/Scope software. Each three-board set is packaged in an attractive tabletop enclosure. Access to the Token/Scope is provided through a user-supplied, standard DEC® VT100™ or compatible display terminal. Users can access help screens from all levels of the user software interface.

## Features

- Protocol analyzer and real-time network monitor for 10 Mbps broadband or 5 Mbps carrierband IEEE-802.4 local area networks
- Frequency agile broadband modem allows operation on any of the IEEE-802.4 channels
- Rapid isolation and diagnosis of IEEE-802.4 protocol problems
- Transmission of frames, including protocol violations for test purposes
- Supports IEEE-802.4 immediate response option
- Statistics collection for key network operational parameters
- Triggering and data collection of defined protocol events
- 16 Kbyte buffer for data collection
- Trigger signal available to synchronize the Token/Scope with other test equipment
- No interference with normal network operation




### Command Mode

The Command Mode allows the user to set parameters and access the Token/Scope Monitor, Trace and Analyze modes.

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## Monitor Mode

The Monitor Mode provides real-time displays of particular events as they occur on the Token/Net network. Events displayed include network traffic, error rates, token rotation rates, and a variety of protocol events, all of which Token/Scope updates in real time. This allows network managers to monitor the entire performance of the network without requiring excessive interaction with the network monitoring device.

## Trace and Analyze Modes

The Trace Mode is used much like a logic analyzer and allows Token/Scope to selectively record specific events occurring on the network as a result of user-defined trigger instructions. The user may specify combinations of frame type, frame source and destination addresses, and the condition of the received frame to cause Token/Scope to increment a counter, record a frame in memory, stop recording and display events, or transmit a user-specified frame. The Trace Mode display indicates counts of events observed on the network, allowing network technicians to examine network operation at a very detailed level.

When triggered by the "stop recording and display" command or by a pre-set overflow value of a Trace Mode counter, Token/Scope will automatically enter the Analyze Mode, and present a chronological display of frames recorded in the Trace Mode and lengthy non-frame activity (silence and noise bursts), for detailed analysis.

# Specifications

## Broadband Token/Scope Network Interface:

### 10 Mbps AM-PSK Broadband

Mid-split CATV configuration
Frequency agile over 3 CATV dual channel pairs
Output impedance: 75 ohms
Receiver Sensitivity: −7 dBmV to +13 dBmV
Transmit Power Levels: +30.5 dBmV to +53 dBmV programmable

### Digital Interface (console port)

Data Format: 8 bit ASCII (no parity)
Data Rate: 9600bps

### Digital Interface (trigger indicator)

BNC connector
TTL logic levels
Trigger Out
Trigger In

### Physical Specifications

Size (inches): 15w × 16.24d × 3.70h
Weight: 12 lbs. (5.4 kg.)

### Environmental

Power: 110/220 VAC 50/60 Hz
Power dissipation: 70 Watts
Temperature: 0°C to 50°C (operating)
−40°C to 70°C (non-operating)
Humidity: 5 to 95% (non-condensing)

### Ordering Information

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Concord Communications, Inc. reserves the right to improve its products and change the above specifications at any time without notice.

## Carrierband Token/Scope Network Interface:

### 5 Mbps Phase Coherent FSK Carrierband

Single channel on passive 75 ohm coaxial cable
Transmit level: 64.5 ±1.5 dB
Receiver sensitivity: +10 dBmV to +66 dBmV

### Digital Interface (console port)

Data Format: 8 bit ASCII (no parity)
Data Rate: 9600bps

### Digital Interface (trigger indicator)

BNC connector
TTL logic levels

### Physical Specifications

Size (inches): 15w × 16.24d × 3.70h
Weight: 12 lbs. (5.4 kg.)

### Environmental

Power: 110/220 VAC 50/60 Hz
Power dissipation: 70 Watts
Temperature: 0°C to 50°C (operating)
−40°C to 70°C (non-operating)
Humidity: 5 to 95% (non-condensing)

### Ordering Information

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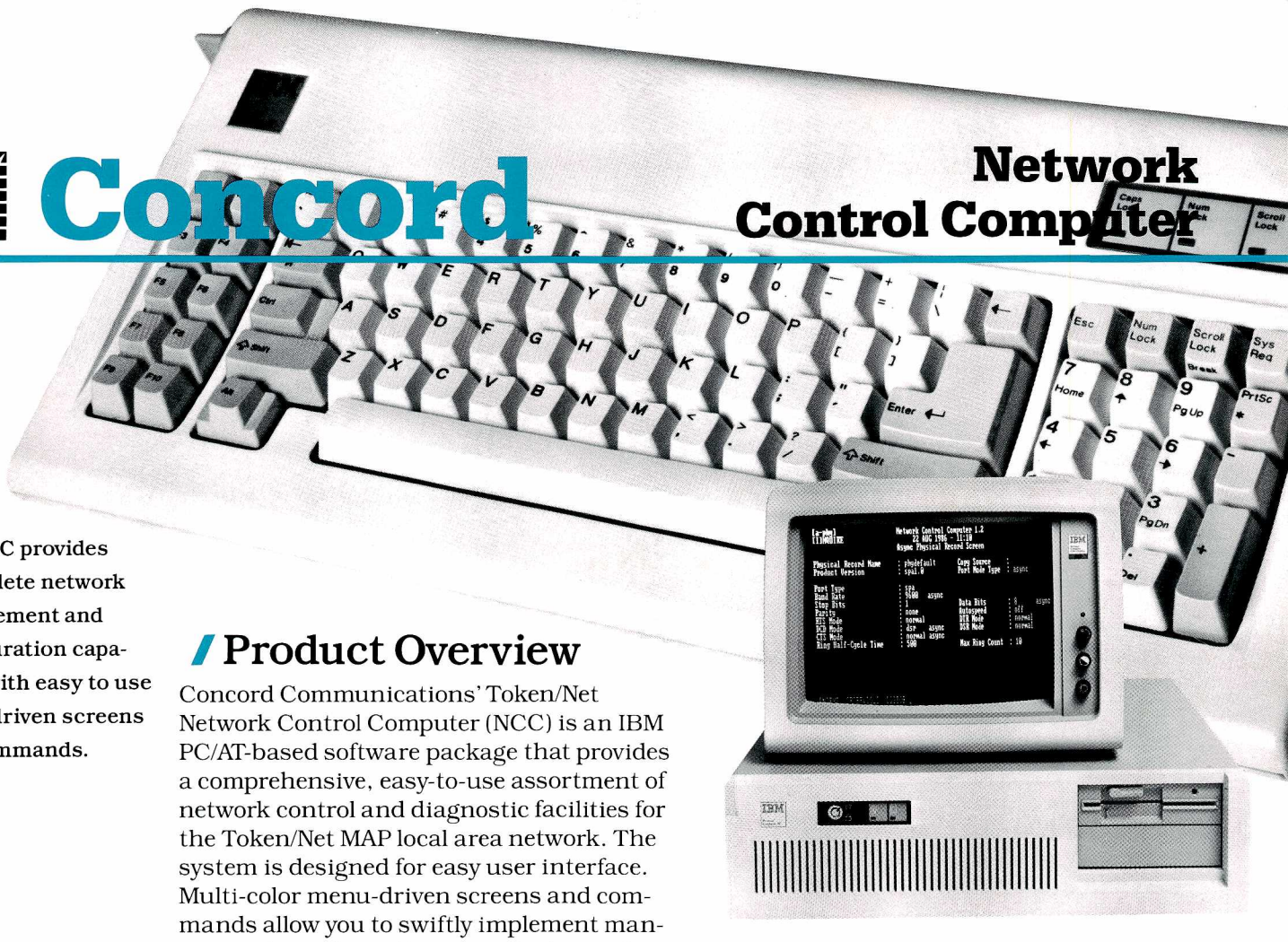
# Network Control Computer



The NCC provides a complete network management and configuration capability with easy to use menu-driven screens and commands.

## Product Overview

Concord Communications' Token/Net Network Control Computer (NCC) is an IBM PC/AT-based software package that provides a comprehensive, easy-to-use assortment of network control and diagnostic facilities for the Token/Net MAP local area network. The system is designed for easy user interface. Multi-color menu-driven screens and commands allow you to swiftly implement management, configuration, monitoring and control processes, taking full advantage of the high performance and flexibility of a CATV-based Token/Net local area network. The NCC product package consists of a multi-user Venix/86™ operating system, a full data base management system (DBMS), and Concord's applications software and data base library.

Concord has designed the NCC package as a background management service that works in conjunction with the station management functions resident in each Token/Net Interface Module (TIM), but independently of the network itself. As a result, the network suffers no degradation in operation or end-user services if the NCC becomes unavailable for any reason.

Highest NCC system security is maintained by individual NCC-user log-ons. DBMS access control is configurable on a per-user, per-screen, and per-function basis.

## Features

- Complete network management independent of real-time network operation
- Cost-effective support of both large and small networks
- Extensive use of color, menu selection, and library functions simplifies system operation
- Allows local and remote network managers to simultaneously interact with the network without interference
- Supports remote access to the system via the network or dial-in modems
- Allows independent log-on, and restrictive DBMS access
- Features audit trail facilities and comprehensive management reports
- Allows less sophisticated network administrators to perform complex network functions, while allowing more sophisticated users access to all levels of system functions
- Connects anywhere on the network via a TIM's RS-232C/V.24 console interface

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## Hardware

The NCC system software runs on an IBM PC/AT.® The PC/AT comes with one 20 Mbyte disk drive, one quad density (1.2 Mbyte) floppy drive, and serial and parallel interfaces. The NCC additionally requires a color graphics monitor and controller card, and a 132 column, Centronics interface, dot matrix printer.

## Software

The Network Control Computer system software includes a multi-user Venix/86 operating system, data base management system, and a configuration library. The NCC software is distributed on IBM-compatible floppy disks which the user loads onto the system's hard disk. After initial installation, all operations use the hard disk.

## Functions

The Network Control Computer carries out four critical network management functions:

### Network Configuration Management

The NCC simplifies the numerous network configuration options facing the network manager.

Associated with each Token/Net Interface Module (TIM) in the network is a physical address, a logical address, and descriptive configuration tables that define the TIM's precise operation. Each RS-232C port on a TIM contains numerous configurable parameters that define its baud rate, level of service, and method of operation. All these records are stored internally within the TIM in non-volatile configuration memory. The TIM's configuration memory can be read or written by the NCC's configuration management process.

To simplify the configuration process, the NCC provides a library of pre-defined configuration profiles that address a wide variety of the most common device attachments. Generic library configurations exist for popular DTE equipment, thereby eliminating the tedious procedure of defining individual device configurations/characteristics.

The NCC also carries out interactive consistency checking to ensure that the resulting configuration is legitimate. Once a configuration is defined, named, and placed in the library, the network manager can download it into as many TIMs as required.

The NCC offers a variety of management reports that list the existing library configurations, as well as a full mapping of the network's TIMs.

### Network Performance and Status Monitoring

The NCC provides a wide range of services which allow network managers to monitor the real-time performance and status parameters that are present in every TIM in the network. The network manager can access this data in either a very high level format, appropriate for a quick overview, or as a very detailed representation for comprehensive analysis. This information is organized by "layer," as listed below:

**Application Layer**
- Status
- Session state
- Packets sent/rcv'd
- Ctl signal changes

**Transport Layer**
- Packets sent
- Packet errors
- Xmt/Rcv timeouts
- Graceful close sent

**LLC Sub-Layer**
- Test/XID sent

**Medium Access Control Sub-Layer**
- No. of stations in the ring
- System status
- Station address
- Token rotation rate
- Total valid frames
- Token pass repeats
- Claims won

**Physical Layer**
- Modem channel of operation
- Head end mode
- Modulation scheme
- Transmit level
- Receive power levels

### Network Diagnostics and Maintenance

The third function of the NCC is to provide diagnostic and test processes to allow network managers to test the operation of the entire Token/Net system. The NCC allows managers to test on a network-wide basis, on a TIM basis, or on a port basis. This allows rapid fault isolation, and speeds system recovery. Many diagnostic processes are capable of operating in background (non-interruptive) mode.

The Network Diagnostic Exerciser (NDE) is a software test program resident within each TIM that allows the TIM to source test frames to other stations in the network. This facility can be used as a frame error rate tester, and is especially useful for testing end-to-end performance. Operation of the NDE does not interfere with ongoing network operation.

The network manager can vary the polling repetition rate and can simultaneously send test frames to 8 remote TIMs, and monitor the individual poll error rates and delay from each remote device. The results can be sent to the monitor or to the NCC printer.

### Report Generator

The NCC provides a report suitable for a wide range of management purposes. With this facility, users may access extensive reports regarding the network's configuration, as well as monitoring or diagnostic results.

### Ordering Information

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